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U. S. DEPARTMENT OF THE INTERIOR
National Park Service

# Fountain Paint Pot, Self-Guiding Nature Trail
# Yellowstone National Park

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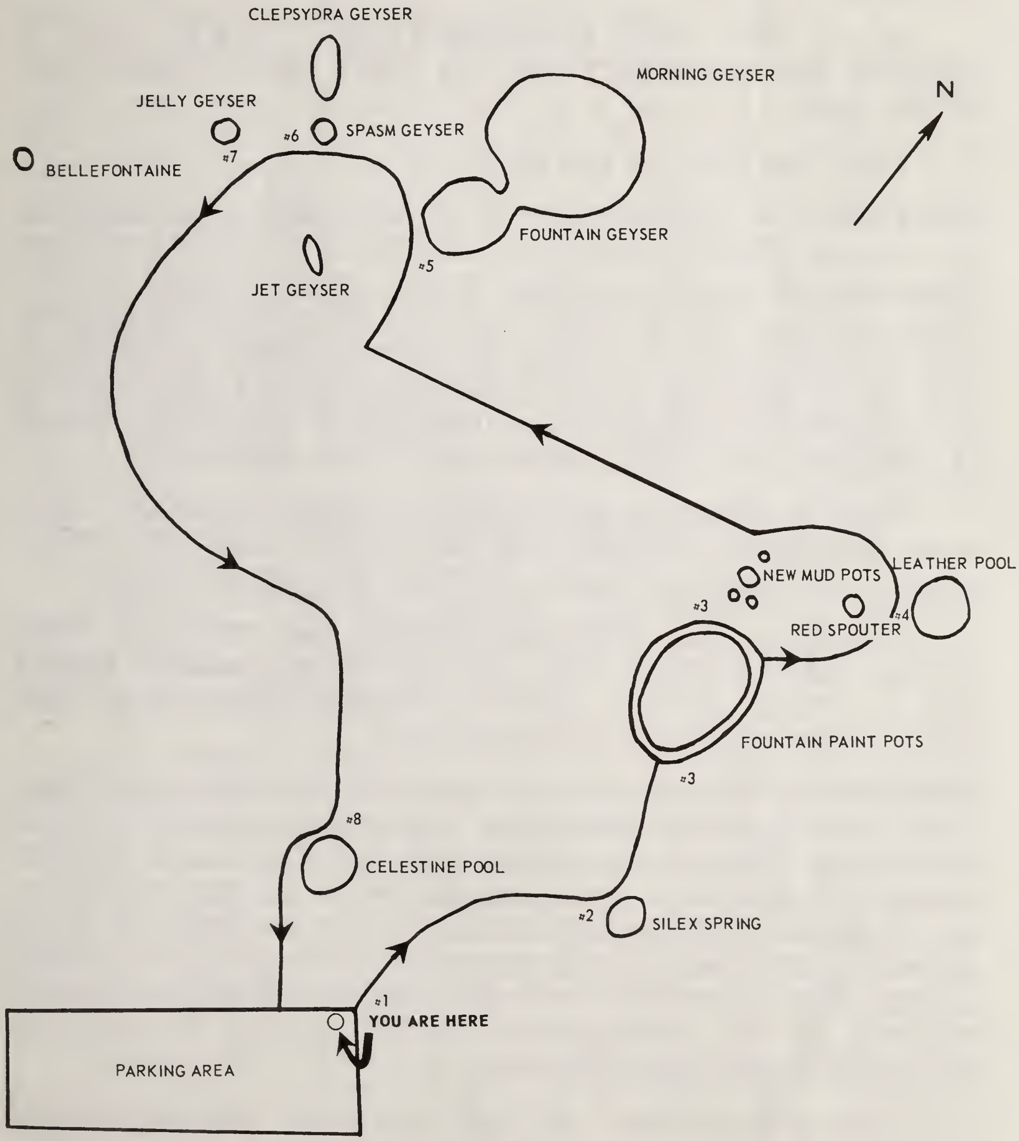

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The above sketch shows the springs covered by the self-guiding leaflet.

# FOUNTAIN PAINT POT, SELF-GUIDING NATURE TRAIL YELLOWSTONE NATIONAL PARK

One of the main objectives of the National Park Service is to preserve the beauty and uniqueness of the hot springs for you and for those who follow. This ideal can be realized only to the extent that Park visitors co-operate by refraining from all experimentation or acts of vandalism.

STAY ON THE BOARDWALKS. THEY ARE A MEANS OF PROTECTION TO YOU AND THE FORMATIONS.

Take the walk to the right.

**STATION 1**—This spring was named Silex in reference to the mineral silica. The mounds and sheets of whitish mineral deposited by the hot springs in the geyser basins consist of an opaline variety of the mineral silica. It is called geyserite. Chemically, it is hydrous silicon dioxide ($H_2O.SiO_2$). Because of its color and general appearance many mistake it for limestone. Geyserite, a member of the quartz family of minerals, is a much harder rock than limestone.

Silex is generally in a state of steady overflow, with some boiling. At times it will have minor eruptions. After an eruption there will be no overflow for several hours.

Following the 1959 earthquake the water in Silex Spring ebbed about 4 feet, and for three weeks it turned into a steady geyser, spouting muddy water. It is now back to its pre-earthquake condition.

**STATION 2**—These mud springs are the Fountain Paint Pots. Mud pots, or paint pots, represent a special type of hot spring. They are numerous in Yellowstone Park. In consistency they vary from murky water to thick mortar. A distinguishing characteristics is the presence of large amounts of fine grained mineral matter and very little water. The scarcer the water the thicker will be the mineral mixture. In the development of mud springs the scarcity of water is a genetic requisite.

The mud in these springs is of their own making. It consists in large measure of clay. There is also present altered rhyolite, large amounts of quartz and some opal.

The color, which varies from white to pink, depends upon the state of the iron which is derived from the original rock, rhyolite.

**STATION 3** — Following the 1959 earthquake the Fountain Paint Pots did not show any immediate response. Four days later the mortar-like mud began rising and thinning, with many new pots developing on this end of the crater. All of the interesting pots and cones on this end have formed since the earthquake. Some of these pots exploded mud over the rail and walk. They are still in the process of change and alteration. Their temperature is about 200 degrees F.

Not only did new mud springs develop in the main bowl, there was an extension of thermal activity outside this crater. To the north, across the old entrance road, a number of new mud springs broke through the grass cover. Their activity, with variation, has persisted. At times mostly steam is ejected. During other periods mud is spouted, the color varying between pink and gray. The water bubbling through the ground by the side of the walk started following the 1959 earthquake. The hot stones at this point are suggesting that thermal activity has extended under the walk from the main bowl.

**STATION 4** — This large spring is Leather Pool. It received its name because of the leathery-appearing algae that lined the crater, giving the spring a brown appearance. The temperature was 143 degrees F. This situation characterized it until the 1959 earthquake. The following morning the water was very murky and had ebbed about 4 inches. Previously there had been a light but steady overflow.

After a few days of slow, but steady ebb, Leather Pool had a series of eruptions. Some of the bursts were about 30 feet high. Practically all of the erupting water fell back into the crater.

The temperature of the water is 165 degrees. This, in connection with the eruptions, has resulted in the present color of the water.

The brick-red spring opposite from Leather Pool is the Red Spouter. It owes its origin to the 1959 earthquake. At first it spouted gray mud, then for several months it was a steam vent. Since January it has been spouting brick-red water. It is steadily enlarging its crater.

**STATION 5**—Two of the Park's important geysers are located here. The one with the raised crater, nearest the walk, is Fountain. Morning is the large steaming spring beyond. They are connected, both above and below ground.

During the first 65 years of the Park's history Fountain was the most important geyser in the surrounding group of hot springs, playing about every 4 hours to a height of near 50 feet. From 1925 until 1946 it was dormant. During this year both Fountain and Morning rejuvenated, and continued periodic eruptive activity until the events of the 1959 earthquake.

Prior to the earthquake the Morning would erupt 2 to 3 times each week. Over 95% of the eruptions occurred during the morning hours, most of them being between 9 and 11 o'clock. The eruptions were very spectacular, lasting from 45 minutes to an hour. During an eruption independent bursts came in rapid succession, there being from 250 to 300 during each active period. Most of the explosions were from 20 to 40 feet in height, occasionally one would be near 150 feet.

About 2 hours following Morning's activity nearby Clepsydra geyser would start erupting. An eruption of Clepsydra was usually followed by one or more of Fountain. This interesting chain action also characterizes other groups of hot springs.

The initial big tremor of the 1959 earthquake started Morning, Fountain and Clepsydra erupting simultaneously. This concerted activity was without precedent. All had been known to erupt independently of each other, but never together. During the night of August 18 Fountain ceased erupting and has remained dormant. With intermittent pauses Morning continued erupting for two weeks, then like Fountain, it entered a dormant cycle. It is quite probable they will stay dormant until steady eruptive activity ceases in Clepsydra Geyser.

The mound 75 feet to the left of the walk is the cone of Jet Geyser. Over the years this geyser has played with a fair degree of consistency, though like all geysers that have underground connections with other springs it has occasional erratic periods, even dormancy. During 1959, prior to the quake, its intervals were varying between about 5 and 8 minutes. Following August 17 the eruptions occurred every 2 to 3 minutes. The shift back and forth between the 2 and 3 minute intervals was gradual and quite uniform. By the middle of September the intervals lengthened to 5 to 6 minutes, where they remained for the rest of the year. Since January Jet has been dormant.

**STATION 6**—The geyser in the depression-like crater directly ahead was named Spasm because of sudden bursts of water during an eruption. Prior to the 1959 earthquake it had two types of eruptions. Some of the eruptions were about 3 feet in height, others were near 30 feet.

Following the quake its eruptions assumed a new violence, and were characterized by a marked steam phase. The steam phase was entirely new. The water played from down in the crater, resulting in the water and steam jets coming at an angle. Prior, the spasm-like bursts of water had been vertical. It is now in a dormant cycle.

Clepsydra is the jetting geyser situated directly back of Spasm. Clepsydra was the name of an ancient Greek water clock. Frequent jets of water from the central vent of this geyser were supposed to mark the passing of time, hence the name Clepsydra. The eruption you are now witnessing is not of the above character. This action has been called the "wild phase" eruption. It is part of the chain action that typically follows an eruption of Morning.

During wild-phase eruptions the action has been from four vents, the one farthest from the walk emitting only steam. Steam played from this vent under great pressure, with an accompanying roar.

The present wild-phase activity, which as stated started simultaneously with eruptive activity of Morning and Fountain, has not ceased since the initial earthquake jarring. Near 6 hours was the longest duration for any previously observed eruption. It would seem that the 1959 earthquake has turned Clepsydra into a steady geyser. In this steady action it is quite probable that it is dissipating energy necessary to bring about an eruption of Morning or Fountain.

During the first three days following the quake Clepsydra's action seemed to increase in force. This was particularly true of the steam vent. By the third day the water in the other three vents was reduced largely to steam. The roar of rushing steam was intimidating. After about two days of violent steam activity from all vents there was an ever increasing admixture of water. This finally resulted in the steam vent becoming a water spouter. In January, 1960, all action in the steam vent ceased, but it started again the last of April. The other three vents, without cessation or pause, have continued erupting since 11:38 p.m., August 17, 1959.

In the flat about one-fourth of a mile beyond this point are numerous hot springs, many of them geysers. At the time of the 1959 earthquake most of these springs erupted. One, named Earthquake Geyser, played about 100 feet in height, the eruptions lasting from 11 to 13 minutes. It still has occasional eruptions. The spring on the extreme right in this group in Gentian Pool. Following the quake, water in it ebbed nearly 4 feet. It is now overflowing again. It is one of the most beautifully colored springs in the Park.

**STATION 7** — Jelly Geyser is to the right of the walk. Like Spasm, it has at least two types of eruptive activity. Until 1957 most of its eruptions were from one to three feet in height, with an occasional 4 to 5 foot one. On rare occasions it would play 10 feet high. Only following these larger eruptions would the water noticeably ebb in the crater.

For several days following the 1959 earthquake Jelly was erupting more than half of the time. All of the eruptions were major in character. Some of the bursts were near 15 feet in height. The activity became less frequent as the season progressed and there was some diminution in the violence of the play. During the past few weeks it has largely been characterized by steady boiling.

The marked coloration in the drainage channels leading away from Jelly, and other hot springs, is not mineral pigmentation. It is due to primitive plants known as algae which thrive in the hot water below 170 degrees F. Color hues are due to temperature variations, the cooler the water the darker the color.

The geyser at the base of the hill, about 200 feet distant, is Bellefontaine. Prior to the 1959 earthquake it was dormant. It erupted at the time of the quake, and has been in an eruptive cycle since. The eruption induced by the quake was quite violent, breaking loose some of the formation about the crater.

**STATION 8**—This spring was named Celestine because of the deep blue coloration of the water. Over the years the water level has been quite uniform, maintaining a steady discharge. Its temperature is at boiling, at this elevation water boils at 199 degrees Fahrenheit.

Following the 1959 earthquake its water was murky, with about a 1 foot ebb in the crater. For the next few days the ebbing progressed until no water could be seen. From August 25 to September 2, Celestine was in an eruptive state. During the first few days the eruptions were all subaerial. That is, they started from down deep in the tube, barely reaching the surface. The water was muddy. About 7 feet of spout could be seen in the crater. By August 31 the eruptions were about 3 feet above the rim, with the water rising in the crater.

The rise of the water was rapid. On September 1 the crater was full enough for light overflow. By September 4 it had filled to pre-earthquake overflow stage; there was light boiling and the water was practically clear. At present Celestine Pool looks very much as it did before the earthquake.

As you leave the parking area you will see a road almost directly ahead. It is the Firehole Lake Loop Road. At Firehole Lake you will be able to obtain another self-guiding leaflet. These leaflets also are available at Biscuit Basin and at Old Faithful.

For further information inquire of the Park Ranger, the man in uniform, or at the Visitor Center at Old Faithful. Here you will be able to obtain additional literature on the hot springs and other aspects of the Park.

The printing of this folder for your convenience has been made possible by the Park Superintendent and members of the Interpretive Division of Yellowstone. If you wish you may keep this folder. However, if it bears no further value to you, kindly deposit it in the container near the parking area in order that others may use it.

Thank you!

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